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L2	0	L1 near10 (antibody or antibodies)	USPAT	OR	OFF	2005/11/09 18:58
L3	0	L1 near10 (antibody or antibodies or monoclonal or polyclonal)	USPAT	OR	OFF	2005/11/09 18:59

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L3 ANSWER 1 OF 8 MEDLINE on STN DUPLICATE 1
 AN 2004362217 MEDLINE
 DN PubMed ID: 15087430
 TI Pregnancy-associated plasma protein-a production in rat
 granulosa cells:
 stimulation by follicle-stimulating hormone and inhibition by the
 oocyte-derived bone morphogenetic protein-15.
 AU Matsui Motozumi; Sonntag Barbara; Hwang Seong Soo; Byerly Tara;
 Hourvitz
 Ariel; Adashi Eli Y; Shimasaki Shunichi; Erickson Gregory F
 CS Department of Reproductive Medicine, University of California
 San Diego,
 La Jolla, California 92093-0674, USA.
 NC U54 HD12303 (NICHD)
 SO Endocrinology, (2004 Aug) 145 (8) 3686-95. Electronic
 Publication:
 2004-04-15.
 Journal code: 0375040. ISSN: 0013-7227.
 CY United States
 DT Journal; Article; (JOURNAL ARTICLE)
 LA English
 FS Abridged Index Medicus Journals; Priority Journals
 EM 200408
 ED Entered STN: 20040722
 Last Updated on STN: 20040818
 Entered Medline: 20040817
 AB Pregnancy-associated plasma protein-A (PAPP-A) is the major IGF
 binding
 protein-4 (IGFBP-4) protease in follicular fluid, consistent
 with its
 proposed role in folliculogenesis. Despite growing interest,
 almost
 nothing is known about how PAPP-A expression is regulated in any
 tissue.
 Here we show that FSH and oocytes regulate PAPP-A expression in
 granulosa
 cells (GCs). By in situ hybridization, ovary PAPP-A mRNA was
 markedly
 increased by pregnant mare serum gonadotropin treatment, and the
 message
 was localized to the membrana GCs but not cumulus GCs (CGCs) of
 dominant
 follicles. To explore the mechanism, we used primary cultures
 of rat GCs.
 Control (untreated) cells produced little or no PAPP-A
 spontaneously.
 Conversely, FSH markedly stimulated PAPP-A mRNA and protein in a
 dose- and
 time-dependent fashion. Interestingly, PAPP-A expression in
 isolated CGCs
 was also strongly induced by FSH, and the induction was
 inhibited by added

oocytes. To investigate the nature of the inhibition, we tested the effect of oocyte-derived bone morphogenetic protein-15 (BMP-15). BMP-15 alone had no effect on basal levels of PAPP-A expression by cultures of membrana GCs or CGCs. However, BMP-15 markedly inhibited the FSH stimulation of PAPP-A production in a dose-dependent manner. The cleavage of IGFBP-4 by conditioned media from FSH-treated GCs was completely inhibited by anti-PAPP-A **antibody**, indicating the **IGFBP -4 protease** secreted by GCs is PAPP-A. These results demonstrate stimulatory and inhibitory roles for FSH and BMP-15, respectively, in regulating PAPP-A production by GCs. We propose that FSH and oocyte-derived BMP-15 form a controlling network that ensures the spatiotemporal pattern of GC PAPP-A expression in the dominant follicle.

L3 ANSWER 2 OF 8 MEDLINE on STN DUPLICATE 2
 AN 2002654650 MEDLINE
 DN PubMed ID: 12414897
 TI Pregnancy-associated plasma protein A proteolytic activity is associated with the human placental trophoblast cell membrane.
 AU Sun Irene Y C; Overgaard Michael T; Oxvig Claus; Giudice Linda C
 CS Department of Gynecology and Obstetrics, Center for Research on Women's Health and Reproductive Medicine, Stanford University Medical Center,
 Stanford, CA 94305-5317, USA.
 NC HD 35789-05 (NICHD)
 SO Journal of clinical endocrinology and metabolism, (2002 Nov) 87 (11) 5235-40.
 Journal code: 0375362. ISSN: 0021-972X.
 CY United States
 DT Journal; Article; (JOURNAL ARTICLE)
 LA English
 FS Abridged Index Medicus Journals; Priority Journals
 EM 200212
 ED Entered STN: 20021105
 Last Updated on STN: 20021217
 Entered Medline: 20021209
 AB Pregnancy-associated plasma protein-A (PAPP-A) is a product of the placenta and decidua and is secreted into the maternal circulation during human pregnancy. It recently has been identified as an IGF binding

protein (IGFBP)-4 protease. Presumed functions at the maternal-fetal interface are to proteolyze IGFBP-4 and thus increase IGF bioavailability locally in the placenta, to promote IGF-II-mediated trophoblast invasion into the maternal decidua, and to modulate IGF regulation of steroidogenesis and glucose and amino acid transport in the villous.

Herein, we have investigated the possibility that IGFBP-4 proteolysis may occur on the trophoblast cell membrane, presumably to increase local bioavailable IGF for interactions with cognate IGF membrane receptors.

Human trophoblasts were cultured, trophoblast plasma membranes were isolated and solubilized, and IGFBP-4 protease activity and PAPP-A immunoreactivity in the solubilized plasma membrane fraction were investigated. IGFBP-4 protease activity was detected in solubilized human trophoblast membranes, resulting in cleavage of recombinant human IGFBP-4 into 18- and 14-kDa fragments, detected by Western immunoblot analysis.

This protease activity was dependent on the presence of IGF-II, and its metal ion dependence was demonstrated by inhibition of the protease by the metal chelators, EDTA and EGTA. The presence of PAPP-A in solubilized human trophoblast membranes was demonstrated by Western immunoblotting.

Trophoblast membrane PAPP-A had a relative molecular weight of approximately 200 kDa and comigrated on (reducing) SDS-PAGE with recombinant human PAPP-A and PAPP-A secreted into media conditioned by cultured human trophoblasts. IGFBP-4 protease activity was not detected after immunodepletion of PAPP-A from the trophoblast membrane fraction with PAPP-A **polyclonal antibodies**, suggesting the identity of the membrane-derived **IGFBP-4 protease** as PAPP-A. Immunocytochemistry revealed PAPP-A on the cell membrane and in the cytoplasm of human trophoblasts in culture.

Together, these data demonstrate the presence of an IGF-II- and metal-dependent IGFBP-4 protease activity in human trophoblast plasma membranes, identified as PAPP-A, which is well situated to proteolyze

IGFBP-4 at the maternal-placental interface to facilitate IGF action at the villous surface and/or the invading extravillous cytotrophoblast.

L3 ANSWER 3 OF 8 MEDLINE on STN DUPLICATE 3
AN 2002255160 MEDLINE
DN PubMed ID: 11994388
TI Identification and regulation of the IGFBP-4 protease and its physiological inhibitor in human trophoblasts and endometrial stroma:
evidence for paracrine regulation of IGF-II bioavailability in the placental bed during human implantation.
AU Giudice L C; Conover C A; Bale L; Faessen G H; Ilg K; Sun I; Imani B; Suen L-F; Irwin J C; Christiansen M; Overgaard M T; Oxvig C
CS Department of Gynecology and Obstetrics, Stanford University Medical Center, Stanford, California 94305, USA.. giudice@stanford.edu
NC U54 HD31398 (NICHD)
SO Journal of clinical endocrinology and metabolism, (2002 May) 87 (5) 2359-66.
Journal code: 0375362. ISSN: 0021-972X.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Abridged Index Medicus Journals; Priority Journals
EM 200206
ED Entered STN: 20020508
Last Updated on STN: 20020615
Entered Medline: 20020614
AB The IGF family plays an important role in implantation and placental physiology. IGF-II is abundantly expressed by placental trophoblasts, and IGF binding protein (IGFBP)-4, a potent inhibitor of IGF actions, is the second most abundant IGFBP in the placental bed, expressed exclusively by the maternal decidua. Proteolysis of IGFBP-4 results in decreased affinity for IGF peptides, thereby enhancing IGF actions. In the current study, we have identified the IGFBP-4 protease and its inhibitor in human trophoblast and decidualized endometrial stromal cell cultures, and we have investigated their regulation in an effort to understand control of IGF-II bioavailability at the placental-decidual interface in human

implantation. IGFBP-4 protease activity was detected in conditioned media

(CM) from human trophoblasts and decidualized endometrial stromal cells

using (125)I-IGFBP-4 substrate. Identification of the IGFBP-4 protease as

pregnancy-associated plasma protein-A (PAPP-A) was confirmed by specific

immunoinhibition and immunodepletion of the **IGFBP-4**

protease activity with specific PAPP-A **antibodies**. The

IGFBP-4 protease activity was IGF-II-dependent in trophoblast

CM. In

decidualized stromal CM, PAPP-A/IGFBP-4 protease activity was also

IGF-II-dependent, but was evident only when IGF-II was added in molar

excess of the predominant IGFBP in decidualized stromal cell CM, IGFBP-1,

supporting bioavailable IGF-II as a key cofactor of IGFBP-4 proteolysis by

PAPP-A. Cultured first and second trimester human trophoblasts (n = 5)

secreted PAPP-A into CM with mean +/- SEM levels of 172.4 +/- 32.8

mIU/liter.10(5) cells, determined by specific ELISA. PAPP-A in trophoblast CM (n = 3) and did not change in the presence of IGF-II (1-100

ng/ml). Cultured human endometrial stromal cells (n = 4) secreted low

levels of PAPP-A (6.25 +/- 3.6 mIU/liter.10(5) cells). A physiological

inhibitor of PAPP-A, the proform of eosinophil major basic protein

(promBP), was detected in trophoblast CM at levels of 1853 +/- 308

mIU/liter.10(5) cells, determined by specific ELISA, and was nearly

undetectable in CM of human endometrial stromal cells. Upon in vitro

decidualization of endometrial stromal cells with progesterone, PAPP-A

levels in CM increased nearly 9-fold without a concomitant change in

promBP. In contrast to the experiments with trophoblasts, IGF-II and the

IGF analogues, Leu(27) IGF-II, and Des (1-6) IGF-II, resulted in a

dose-dependent decrease of PAPP-A levels in decidualized endometrial

stromal CM by 70-90%, and a dose-dependent increase in promBP of 14- to

41-fold. The data demonstrate conclusively that the IGF-II-dependent

IGFBP-4 protease of human trophoblast and decidual origin is PAPP-A.

Furthermore, the differential regulation of decidual PAPP-A and proMBP by

insulin-like peptides supports a role for trophoblast-derived IGF-II as a

paracrine regulator of these maternal decidual products that have the

potential to regulate IGF-II bioavailability at the trophoblast-decidual

interface. Overall, the data underscore potential roles for a complex

family of enzyme (PAPP-A), substrate (IGFBP-4), inhibitor (proMBP), and

cofactor (IGF-II) in the placental bed during human implantation.

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DUPLICATE 4

AN 2001166450 EMBASE

TI Pregnancy-associated plasma protein-A is the insulin-like growth factor

binding protein-4 protease secreted by human ovarian granulosa cells and

is a marker of dominant follicle selection and the corpus luteum.

AU Conover C.A.; Faessen G.F.; Ilg K.E.; Chandrasekher Y.A.; Christiansen M.;

Overgaard M.T.; Oxvig C.; Giudice L.C.

CS Dr. L.C. Giudice, Dept GYN, Stanford University Medical Center, Stanford,

CA 94305, United States

SO Endocrinology, (2001) Vol. 142, No. 5, pp. 2155-2158.

Refs: 24

ISSN: 0013-7227 CODEN: ENDOAO

CY United States

DT Journal; Article

FS 003 Endocrinology

010 Obstetrics and Gynecology

029 Clinical Biochemistry

LA English

SL English

ED Entered STN: 20010523

Last Updated on STN: 20010523

AB Insulin-like growth factors (IGFs), IGF binding proteins (IGFBPs), and

IGFBP proteases are important in ovarian function. IGFs stimulate

granulosa steroidogenesis, an effect that is inhibited by IGFBP-4 and

augmented by IGFBP-4 proteolysis. We have recently identified the IGFBP-4

protease in human ovarian follicular fluid (FF) as pregnancy-associated plasma protein-A (PAPP-A). In the current study, we identify the IGFBP-4 protease secreted by cultured human ovarian granulosa cells as PAPP-A, based on specific immunoinhibition and immunodepletion of the IGFBP-4 protease activity with PAPP-A polyclonal antibodies and immunorecognition by PAPP-A monoclonal antibodies in ELISA. PAPP-A was barely detectable in conditioned media (CM) from granulosa derived from ≤ 9 mm androgendominant follicles, but was secreted by cultured granulosa from estrogen-dominant follicles ≥ 9 mm, coincident with dominant follicle selection, and by luteinizing granulosa. PAPP-A levels in CM from the latter did not change in response to IGF-II or hCG (100 ng/mL). A naturally occurring inhibitor of PAPP-A, proform of eosinophil major basic protein (promBP), was detected by ELISA in estrogen-dominant follicular fluid FF, but not in CM from granulosa or luteinizing granulosa cells treated with IGF-II (0-200 ng/mL), FSH (0-100 ng/mL) or hCG (0-100 ng/mL), suggesting an alternative source (other than granulosa) for promBP, compared to PAPP-A. The data demonstrate granulosa cells as a source of PAPP-A in human ovary and suggest that PAPP-A is a marker of ovarian follicle selection and corpus luteum formation. In addition the data suggest complex regulation of this system in human ovary.

L3 ANSWER 5 OF 8 MEDLINE on STN

AN 2001262826 MEDLINE

DN PubMed ID: 11316785

TI Pregnancy-associated plasma protein-a is the insulin-like growth factor

binding protein-4 protease secreted by human ovarian granulosa cells and

is a marker of dominant follicle selection and the corpus luteum.

AU Conover C A; Faessen G F; Ilg K E; Chandrasekher Y A; Christiansen M;

Overgaard M T; Oxvig C; Giudice L C

CS Endocrine Unit, Mayo Clinic, Rochester, Minnesota 55905, USA.

NC HD31579-07 (NICHD)

SO Endocrinology, (2001 May) 142 (5) 2155.

Journal code: 0375040. ISSN: 0013-7227.

CY United States
 DT Journal; Article; (JOURNAL ARTICLE)
 LA English
 FS Abridged Index Medicus Journals; Priority Journals
 EM 200105
 ED Entered STN: 20010521
 Last Updated on STN: 20010521
 Entered Medline: 20010517
 AB Insulin-like growth factors (IGFs), IGF binding proteins (IGFBPs), and IGFBP proteases are important in ovarian function. IGFs stimulate granulosa steroidogenesis, an effect that is inhibited by IGFBP-4 and augmented by IGFBP-4 proteolysis. We have recently identified the IGFBP-4 protease in human ovarian follicular fluid (FF) as pregnancy-associated plasma protein-A (PAPP-A). In the current study, we identify the IGFBP-4 protease secreted by cultured human ovarian granulosa cells as PAPP-A, based on specific immunoinhibition and immunodepletion of the **IGFBP-4 protease** activity with PAPP-A **polyclonal antibodies** and immunorecognition by PAPP-A monoclonal antibodies in ELISA. PAPP-A was barely detectable in conditioned media (CM) from granulosa derived from ≤ 9 mm androgen-dominant follicles, but was secreted by cultured granulosa from estrogen-dominant follicles ≥ 9 mm, coincident with dominant follicle selection, and by luteinizing granulosa. PAPP-A levels in CM from the latter did not change in response to IGF-II or hCG (100 ng/mL).
 A naturally occurring inhibitor of PAPP-A, proform of eosinophil major basic protein (promBP), was detected by ELISA in estrogen-dominant follicular fluid FF, but not in CM from granulosa or luteinizing granulosa cells treated with IGF-II (0-200 ng/mL), FSH (0-100 ng/mL) or hCG (0-100 ng/mL), suggesting an alternative source (other than granulosa) for promBP, compared to PAPP-A. The data demonstrate granulosa cells as a source of PAPP-A in human ovary and suggest that PAPP-A is a marker of ovarian follicle selection and corpus luteum formation. In addition the data suggest complex regulation of this system in human ovary.

L3 ANSWER 6 OF 8 MEDLINE on STN DUPLICATE 5
 AN 2001260195 MEDLINE
 DN PubMed ID: 11231911
 TI Insulin-like growth factor binding protein-4 protease produced
 by smooth muscle cells increases in the coronary artery after angioplasty.
 AU Bayes-Genis A; Schwartz R S; Lewis D A; Overgaard M T;
 Christiansen M;
 Oxvig C; Ashai K; Holmes D R Jr; Conover C A
 CS Division of Cardiovascular Diseases, Mayo Clinic and Foundation,
 Rochester, Minnesota, USA.
 SO Arteriosclerosis, thrombosis, and vascular biology, (2001 Mar)
 21 (3)
 335-41.
 Journal code: 9505803. ISSN: 1524-4636.
 CY United States
 DT Journal; Article; (JOURNAL ARTICLE)
 LA English
 FS Priority Journals
 EM 200105
 ED Entered STN: 20010521
 Last Updated on STN: 20010521
 Entered Medline: 20010517
 AB Insulin-like growth factor (IGF)-I stimulates vascular smooth
 muscle cell
 (VSMC) migration and proliferation, which are fundamental to
 neointimal
 hyperplasia in postangioplasty restenosis. IGF-I action is
 modulated by
 several high-affinity IGF binding proteins (IGFBPs). IGFBP-4 is
 the
 predominant IGFBP produced by VSMCs and is a potent inhibitor of
 IGF-I
 action. However, specific IGFBP-4 proteases can cleave IGFBP-4
 and
 liberate active IGF-I. In this study, we document IGFBP-4
 protease
 produced by human and porcine coronary artery VSMCs in culture as
 pregnancy-associated plasma protein-A (PAPP-A). This was shown
 by a
 distinctive IGFBP-4 cleavage pattern, specific inhibition of
 IGFBP
 -4 protease activity with PAPP-A polyclonal
 antibodies, and immunorecognition of PAPP-A by monoclonal
 antibodies. Furthermore, we found a 2-fold increase in IGFBP-4
 protease
 activity in injured porcine VSMC cultures in vitro ($P < 0.05$). We
 also
 evaluated IGFBP-4 protease/PAPP-A expression in vivo after
 coronary artery
 balloon injury. Twenty-five immature female pigs underwent
 coronary

overstretch balloon injury, and vessels were examined at defined time points after the procedure. Abundant PAPP-A expression was observed in the cytoplasm of medial and neointimal cells 7, 14, and 28 days after angioplasty ($P < 0.01$ vs control). The highest PAPP-A labeling indices were located in the neointima ($36.1 \pm 2.1\%$) and the media ($31.7 \pm 1.2\%$) 28 days after injury. Western blot analysis confirmed increased PAPP-A in injured vessels. PAPP-A, a regulator of IGF-I bioavailability through proteolysis of IGFBP-4, is thus expressed by VSMCs in vitro and in restenotic lesions in vivo. These results suggest a possible role for PAPP-A in neointimal hyperplasia.

L3 ANSWER 7 OF 8 MEDLINE on STN DUPLICATE 6
 AN 2000066728 MEDLINE
 DN PubMed ID: 10599745
 TI Evidence that the insulin-like growth factor binding protein-4 protease in human ovarian follicular fluid is pregnancy associated plasma protein-A.
 AU Conover C A; Oxvig C; Overgaard M T; Christiansen M; Giudice L C
 CS Endocrine Research Unit, Mayo Clinic and Mayo Foundation, Rochester, MN 55905, USA.. Conover.Cheryl@Mayo.Edu
 NC HD 31579-05 (NICHD)
 SO Journal of clinical endocrinology and metabolism, (1999 Dec) 84 (12) 4742-5.
 Journal code: 0375362. ISSN: 0021-972X.
 CY United States
 DT Journal; Article; (JOURNAL ARTICLE)
 LA English
 FS Abridged Index Medicus Journals; Priority Journals
 EM 200001
 ED Entered STN: 20000124
 Last Updated on STN: 20000124
 Entered Medline: 20000107
 AB Ovarian insulin-like growth factor binding protein-4 (IGFBP-4) proteolysis is involved in the regulation of follicular development, but until now the identity of the responsible enzyme was unknown. In this study, we identify the IGFBP4 protease in human follicular fluid as pregnancy

associated plasma protein-A (PAPP-A) based on distinctive IGFBP-4 cleavage pattern, the same protease inhibitor profile, specific inhibition and immunodepletion of **IGFBP-4 protease** activity with PAPP-A **polyclonal antibodies**, and immunorecognition by PAPP-A monoclonal antibodies in ELISA. Furthermore, PAPP-A levels in estrogen-dominant and androgen-dominant follicular fluids reflect their IGFBP-4 proteolytic activity. PAPP-A was also secreted by human granulosa cells, the reputed source of IGFBP-4 protease activity in follicular fluid. We have the molecular and biochemical tools to begin to delineate the regulation and biological function of PAPP-A in normal and dysregulated follicular development and atresia.

L3 ANSWER 8 OF 8 MEDLINE on STN DUPLICATE 7
 AN 1999179030 MEDLINE
 DN PubMed ID: 10077652
 TI The insulin-like growth factor (IGF)-dependent IGF binding protein-4 protease secreted by human fibroblasts is pregnancy-associated plasma protein-A.
 AU Lawrence J B; Oxvig C; Overgaard M T; Sottrup-Jensen L; Gleich G J; Hays L G; Yates J R 3rd; Conover C A
 CS Endocrine Research Unit, Mayo Clinic and Mayo Foundation, Rochester, MN 55905, USA.
 NC AI09728 (NIAID)
 DK07352 (NIDDK)
 GM52095 (NIGMS)
 SO Proceedings of the National Academy of Sciences of the United States of America, (1999 Mar 16) 96 (6) 3149-53.
 Journal code: 7505876. ISSN: 0027-8424.
 CY United States
 DT Journal; Article; (JOURNAL ARTICLE)
 LA English
 FS Priority Journals
 EM 199905
 ED Entered STN: 19990601
 Last Updated on STN: 20000303
 Entered Medline: 19990520
 AB Proteolytic cleavage of the six known insulin-like growth factor binding proteins (IGFBPs) is a powerful means of rapid structure and function

modification of these important growth-regulatory proteins.

Intact

IGFBP-4 is a potent inhibitor of IGF action in vitro, and cleavage of

IGFBP-4 has been shown to abolish its ability to inhibit IGF stimulatory

effects in a variety of systems, suggesting that IGFBP-4 proteolysis acts

as a positive regulator of IGF bioavailability. Here we report the

isolation of an IGF-dependent IGFBP-4-specific protease from human

fibroblast-conditioned media and its identification by mass spectrometry

microsequencing as pregnancy-associated plasma protein-A (PAPP-A), a

protein of unknown function found in high concentrations in the maternal

circulation during pregnancy. **Antibodies** raised against PAPP-A both inhibited and immunodepleted **IGFBP-4**

protease activity in human fibroblast-conditioned media.

Moreover, PAPP-A purified from pregnancy sera had IGF-dependent IGFBP-4

protease activity. PAPP-A mRNA was expressed by the human fibroblasts and

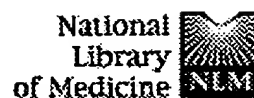
osteoblasts, and PAPP-A protein was secreted into the culture medium. In

conclusion, we have identified an IGF-dependent IGFBP protease and at the

same time assigned a function to PAPP-A. This represents an unanticipated

union of two areas of research that were not linked in any way before this

report.



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☐ 1: Jia D, Heersche JN.

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☐ Pregnancy-associated plasma protein-A proteolytic activity in rat vertebral cell cultures: stimulation by dexamethasone--a potential mechanism for glucocorticoid regulation of osteoprogenitor proliferation and differentiation.

J Cell Physiol. 2005 Sep;204(3):848-58.

PMID: 15754336 [PubMed - indexed for MEDLINE]

☐ 2: Qin QP, Kokkala S, Lund J, Tamm N, Voipio-Pulkki LM, Pettersson K.

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☐ Molecular distinction of circulating pregnancy-associated plasma protein A in myocardial infarction and pregnancy.

Clin Chem. 2005 Jan;51(1):75-83.

PMID: 15613709 [PubMed - indexed for MEDLINE]

☐ 3: Gerard N, Delpuech T, Oxvig C, Overgaard MT, Monget P.

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☐ Proteolytic degradation of IGF-binding protein (IGFBP)-2 in equine ovarian follicles: involvement of pregnancy-associated plasma protein-A (PAPP-A) and association with dominant but not subordinated follicles.

J Endocrinol. 2004 Sep;182(3):457-66.

PMID: 15350187 [PubMed - indexed for MEDLINE]

☐ 4: Zorin NA, Zorina VN.

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☐ [Role of proteins of the macroglobulin family in the mechanisms of infection]

Zh Mikrobiol Epidemiol Immunobiol. 2004 May-Jun;(3):105-12.







Review. Russian.

PMID: 15346965 [PubMed - indexed for MEDLINE]

☐ 5: Matsui M, Sonntag B, Hwang SS, Byerly T, Hourvitz A, Adashi EY, Shimasaki S.


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Erickson GF.


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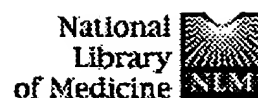
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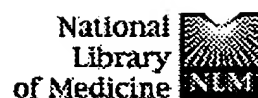
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